

16. STUDIES ON THE FEEDING HABITS OF HOUSE SPARROW *PASSER DOMESTICUS* (L.) AND ITS NESTLING IN PUNJAB

The house sparrow, *Passer domesticus* (L.) is omnivorous and its food consists of wheat, pearl millet, maize, sorghum, groundnut, insects, moth beans, newly sown seeds of Egyptian clover and sweet clover, seedlings of chillies and paddy, young lettuce, chrysanthemum, polyanthus, nectaries, buds of currants, gooseberry and mulberry, leaves of primrose, polyanthus and spinach, fruits of grapes, peach, pear, apple, plum, and kitchen scraps (Ali 1972; Hussain & Bhalla 1937; Samuel 1951; Sekhon 1966; Srivastava 1964; Theodorewood 1925 and Wright 1959), but its sources of food throughout the year have never been studied in detail.

During the present study, feeding habits of house sparrow and its nestlings were studied. The study was conducted by direct observations in the field as well as by examining the gut contents of 779 (388 males, 391 females) birds collected at weekly intervals from different localities both qualitatively and quantitatively. Similarly, the guts of 64 nestlings of different ages were examined. For qualitative analysis, the different food items from crop/gizzard were just sorted out. But for quantitative analysis, the different food items were assigned numerical values i.e. points depending upon the individual mass by eye estimation. Points of each food were totalled and its per cent proportion with respect to total points of all the foods in a month was worked out.

A variety of food material namely, wheat (*Triticum aestivum* L.), pearl millet [*Pennisetum typhoides* (Burm. f.) Stapf and C. E. Hubb], rice (*Oryza sativa* L.), maize (*Zea mays* L.), sorghum (*Sorghum bicolor* Moench.); groundnut (*Arachis hypogaea* L.),

weeds, pulses (green gram, moth beans, Bengal gram) from shops and kitchen scraps and insects depending upon the season formed the diet of the bird, wheat, pearl millet, rice, weeds and insects being the major part of the diet. Wheat in February to August, pearl millet in September to October, rice in October to November, weeds in December to January topped in their proportion. The birds took the maximum insect food during March, May, June and July. In case of maize, sorghum and pulses, groundnut and green leaves, their maximum consumption was observed in March, November and January, respectively.

The insect food taken by the house sparrows in the field and that which was found in the guts of the adults and nestlings (fed by adults) comprised caterpillars, flies, beetles, ants, bugs, grasshoppers and spiders. The following species were identified: Caterpillars, and moths of army worm (*Mythemna separata*), caterpillars of cabbage semilooper (*Plusia* sp.), gram caterpillar (*Heliothis armigera*), lucerne caterpillar (*Spodoptera exigua*), tobacco caterpillar (*Spodoptera litoralis*), taken from Egyptian clover, cotton pink boll worm (*Pectinophora gossypiella*) taken from cotton ginning factory in January, adults of house fly (*Musca domestica* L.), carpenter ants (*Camponotus compressus*), mustard aphid (*Hyadaphis erysimi*) from inflorescence of radish in March, spotted aphid (*Theoaphis maculata*), larvae and pupae of diamond back moth (*Plutella xylostella*) from cauliflower, surface grasshoppers (*Oxya nitidula* Walker, *Acrida* sp.), honey bee (*Apis* sp.), striped lady beetle (*Brumus suturalis*), syrphid flies (*Metasyrphus* sp.), cereal earhead bug (*Dolichorus indicus*), grey weevil (*Myl-*

locerus sp.), til leaf folder (*Antigastra catalunalis*), larvae of rotten flies, brown wire worm, spotted wire worm and spider (*Oxyopes pandae*). About fifteen species of insects belonging to lepidoptera, orthoptera, hymenoptera, diptera and one species of spider remained unidentified.

House sparrows fed on the green leaves of fumatory (*Fumaria parviflora* Lam.), bird-seed grass (*Phalaris minor* Retz.), lamb's quarter (*Chenopodium album* L.) Egyptian clover (*Trifolium alexandrinum* Juslen), cluster bean [*Cyamopsis tetragonoloba* (L.)], peas (*Pisum sativum* L.), fenugreek (*Trigonella foenum-graecum* L.), toothed bur clover (*Medicago denticulata* Willd.), cauliflower (*Brassica oleracea* L. var. *botrytis* L.), spinach (*Spinacia oleracea* L.) and forked catch fly (*Silene conidea*). The inflorescence of thatch grass (*Saccharum spontaneum* L.), in January, maize in August and nectar of pangara (*Erythrina indica* Lamk. var. *parcel-iri* Hort.) in April and peacock flower [*Delonix regia* (Boj.) Raf.] in July were also taken. Besides, seeds of a number of weeds such as crow-foot grass (*Eleusine aegyptiaca* Desf.), bird-seed grass, lamb's quarter, white cock's comb (*Celosia argentea* L.), and forked catch fly and six unidentified species were taken. The crow-foot grass in December and January (next being lamb's quarter), bird-seed grass in March, April and June topped in consumption. The maximum consumption of lamb's quarter, crow-foot grass and bird-seed grass was observed in December, January and April, respectively. In total, the per cent proportion of crow-foot grass was the highest (30.9), followed by bird-seed grass (27.0), lamb's quarter (16.3) and rest of the weeds.

With regard to the food of nestlings which has been worked in detail for the first time, 84 per cent of the total food comprised of

insects, the rest being weeds, wheat and rice. Among the insect species, caterpillars formed the major portion (37.7%) followed by beetles (20.8%), flies (11.5%), grasshoppers (7.2%) and maggots and pupae (5.2%), spiders (1.3%) and ants (1.1%) (Table 2).

Considering the total food during the year of the house sparrow (adults), the per cent proportion of wheat was the highest i.e. 30.8, followed by weeds (16.2), pearl millet (12.0), rice (11.1), insects (8.1) and rest of the food material (2.6 to 0.9) (Table 1). Sekhon (1966) studied the guts of 71 birds from September to April (for 8 months in 1965-66). He calculated the quantity of individual food item in terms of volume (CC) of water displaced by it in a measuring cylinder and reported that the per cent proportion of wheat as also observed in the present studies was highest, 34.0 followed by pearl millet (31.0), groundnut (19.0), sorghum (13.0) and moth beans (1.0). He also mentioned that traces of black ants and larvae were observed in the guts of the birds during April and October. Hussain & Bhalla (1937) also reported that the birds feed on the caterpillars of cotton leaf roller (*Sylepta derogata* Fab.) from *Bhindi* plants.

The new food items recorded and identified for the first time in Punjab are as follows: green gram, Bengal gram, caterpillars and moths or armyworm, caterpillars of cabbage semilooper, gram caterpillar, lucerne caterpillar, tobacco caterpillar, til leaf folder, brown wire worm, spotted wire worm, cotton pink boll worm, adults of house fly, carpenter ants, mustard aphid, larvae and pupae of diamond back moth and spider (*Oxyopes pandae*), surface grasshoppers, honey bee, striped lady beetle, syrphid flies, cereal ear-head bug, grey weevil; green leaves of peas, fumatory, bird-seed grass, lamb's quarter,

MISCELLANEOUS NOTES

TABLE 1

RELATIVE PROPORTION (%) OF FOODS CONSUMED BY HOUSE SPARROWS IN DIFFERENT MONTHS
(AUGUST 1973-JULY 1974)

Month	Number of birds studied	Wheat	Bajra	Rice	Maize	Sorghum	Oates	Groundnut	Weeds	Insects	Pulses	Green leaves
Aug.	27	34.0	6.0	9.7	0.0	0.0	0.0	0.0	16.6	5.1	8.2	0.5
Sept.	44	1.4	44.0	15.0	0.0	0.0	0.0	0.0	15.0	5.0	0.0	0.0
Oct.	15	28.0	30.0	30.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0
Nov.	68	16.3	19.0	24.8	3.0	9.5	0.0	1.3	5.9	1.6	4.0	1.0
Dec.	62	11.6	20.0	14.5	0.0	0.0	0.0	3.5	29.2	4.7	0.0	1.0
Jan.	67	4.0	6.0	3.0	7.9	0.3	0.0	13.8	34.7	3.1	0.6	8.2
Feb.	44	20.0	0.0	18.6	3.6	1.2	0.0	3.0	4.0	0.2	3.6	6.0
March	94	45.0	3.6	4.0	14.0	0.0	0.0	0.0	6.2	11.5	0.0	0.4
April	153	46.8	9.1	1.9	2.0	0.3	0.0	0.0	11.2	2.0	0.0	0.1
May	52	59.3	0.0	1.2	0.0	0.0	0.0	0.0	12.0	15.1	1.5	2.6
June	107	46.9	0.0	3.6	0.0	0.0	0.0	0.0	8.2	19.6	0.0	6.4
July	46	37.0	0.0	0.0	0.0	0.0	14.3	0.0	31.8	11.0	0.0	0.5
Total	779	350.3	137.7	126.3	30.5	11.3	14.3	21.6	174.8	82.2	17.9	26.7
Overall %age	—	30.8	12.0	11.1	2.6	0.9	1.5	1.9	16.2	8.1	1.5	2.2

Note: Grits accounted for 10.4% of total food.

TABLE 2

RELATIVE PROPORTION (POINTS) OF DIFFERENT FOOD ITEMS OF THE NESTLINGS OF HOUSE SPARROW

Age of nestlings (days)	No. of nestlings observed	Food items									
		Cater pillars	House flies/hover flies/others	Beetles	Spiders	Ants	Pupae/Maggots	Grass hoppers	Weeds	Wheat	Rice
1	8	26	23	3	2	5	0	0	0	0	0
2	7	18	32	3	2	0	7	0	2	0	0
3	8	30	12	18	1	0	0	9	14	3	0
4	3	10	10	16	3	5	0	7	3	0	0
5	14	120	17	68	0	0	35	20	8	12	1
6	9	40	6	28	4	0	3	15	11	1	2
7	4	28	0	9	0	0	0	6	19	12	0
8	4	0	0	24	0	0	0	5	1	7	0
10	6	46	0	0	0	0	0	0	0	2	0
12-14	2	10	0	10	0	0	0	0	0	5	0
Total	65	328	100	179	12	10	45	62	58	42	3
%age of G. total		37.7	11.5	20.8	1.3	1.1	5.2	7.2	6.7	5.2	0.4

Note: Grits accounted for 1.5% of nestlings food.

Egyptian clover, cluster bean, fenugreek, toothed bur clover and cauliflower; nectar of pangara and peacock flower and seeds of crow-foot grass, bird-seed grass, lamb's quarter and white cock's comb.

The study reveals that house sparrow is a pest, mainly of wheat, pearl millet and rice in the field. But it also feeds on a number of weeds, during December to January and April and on insects (mostly harmful) during its breeding season during March to July except approximately in the second half of April when along with taking insects and other foods they damage the wheat at milk stage especially in those fields which are near villages, trees or hedges. This fifteen days period of damage is practically of short duration. As soon as the bird is actively engaged in breeding, it shifts more or less to insect food which is essential especially for nestling, and by that time, wheat passes the milk stage and becomes ready for harvest. Though wheat formed the major portion of diet from Feb. to Aug., it is not obtained from the standing wheat, but from the harvested fields, threshing yards, houses etc. I feel the real danger of house sparrow as a pest is to pearl millet and rice during August to November. During Sep-

tember to October however, there is a breeding season but it is a minor one in which one brood is raised that too not by all the breeding pairs. During the present study, out of 81 nests observed with eggs during March to July, only 4 per cent contained eggs in September to October. Semaskho (1963) also reported that only 25-30 per cent of sparrows breed twice a year. The insect food requirement of the birds during September-October, is naturally less and therefore less useful activity of house sparrows during the period. Control measures against house sparrow could be directed during August-November also to minimise crop losses.

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